CLAIMS

1. A method of calibrating an N-port multiport test system for measurement of a DUT, consisting of the steps of:

coupling each port of an N-port automatic calibration device to a respective port of the N-port multiport test system;

presenting three reflection standards with the automatic calibration device to each port of the N-port multiport test system;

providing with the automatic calibration device, N-1 through conditions of a possible N(N-1)/2 possible through conditions, between corresponding ports of the N-port multiport test system;

making measurements with the N-port multiport test system of the three reflection standards at each port and the N-1 through conditions between the corresponding ports; and

determining all of systematic error coefficients for all of the ports of N-port multiport test system.

2. The method of calibrating the N-port multiport test system as claimed in claim 1, wherein the step of determining all of the systematic error coefficients comprises determining corresponding one-port error coefficients for each port of the N-port multiport test system.

3. The method of calibrating the N-port multiport test system as claimed in claim 1, wherein the step of determining all of the systematic error coefficients comprises determining a load match for each port of the N-port multiport test system.

4. The method of calibrating the N-port multiport test system as claimed in claim 1, wherein the step of determining all of the systematic error coefficients comprises determining a directivity for each port of the N-port multiport test system.

5. The method of calibrating the N-port multiport test system as claimed in claim 1, wherein the step of determining all of the systematic error coefficients comprises determining a source match for each port of the N-port multiport test system.

6. The method of calibrating the N-port multiport test system as claimed in claim 1, wherein the step of determining all of the systematic error coefficients comprises determining a reflection tracking for each port of the N-port multiport test system.

7. The method of calibrating the N-port multiport test system as claimed in claim 1, wherein the step of determining all of the systematic error coefficients comprises determining all N(N-1)/2 forward transmission tracking coefficients for all N(N-1)/2 two-port paths between all
N-ports of the N-port multiport test system.

8. The method of calibrating the N-port multiport test system as claimed in claim 1, wherein the step of providing the N-1 through conditions comprises providing N through conditions.

9. The method of calibrating the N-port multiport test system as claimed in claim 1, wherein the step of providing the N-1 through conditions comprises providing N(N-1)/2 through conditions.

10. The method of calibrating the N-port multiport test system as claimed in claim 1, wherein the step of determining the systematic error coefficients comprises determining all N(N-1)/2 reverse transmission tracking coefficients for all N(N-1)/2 two-port paths between all N-ports of the N-port multiport test system.

11. The method of calibrating the N-port multiport test system as claimed in claim 1, wherein the step of presenting the three reflection standards comprises coupling the three reflection standards to each port of the N-port multiport test system with the N-port automatic calibration device comprising at least one single-pole, N-1 throw switch.

12. The method of calibrating the N-port multiport test system as claimed in claim 11, wherein the step of presenting the three reflection standards further comprises biasing at least one single-pole, double-throw switch to provide the three reflection standards.

13. The method of calibrating the N-port multiport test system as claimed in claim 1, wherein the step of providing the N-1 through conditions comprises providing the N-1 through conditions to the corresponding ports of the N-port multiport test system with the N-port automatic calibration device comprising at least one single-pole, N-1 throw switch.

14. A combination of an N-port multiport test set that can characterize a multi-terminal DUT and an N-port multiport automatic calibration device, wherein each port of the multiport automatic calibration device is coupled to a respective port of the multiport test set, the multiport test set and the multiport automatic calibration device being configured to accomplish the steps consisting of:

presenting three reflection standards with the multiport automatic calibration device to each port of the multiport test set;

providing with the multiport automatic calibration device, N-1 through conditions of a possible N(N-1)/2 possible through conditions between corresponding ports of the multiport test set;

measuring with the multiport test set, of the three reflections standards presented to each port of the multiport test set and the N-1 through conditions between the corresponding ports; and

determining all systematic error coefficients for all of the ports of the multiport test system.

15. The combination of the multiport test set and the multiport automatic calibration device as claimed in claim 14, wherein the combination is further configured in determining all systematic error coefficients to determine corresponding one-port error coefficients for each port of the multiport test set.

16. The combination of the multiport test set and the multiport automatic calibration device as claimed in claim 14, wherein the combination is further configured in determining all systematic error coefficients to determine a load match for each port of the multiport test set.

17. The combination of the multiport test set and the multiport automatic calibration device as claimed in claim 14, wherein the combination is further configured in

determining all systematic error coefficients to determine a directivity for each port of the multiport test set.

18. The combination of the multiport test set and the multiport automatic calibration device as claimed in claim 14, wherein the combination is further configured in determining all systematic error coefficients to determine a source match for each port of the multiport test set.

19. The combination of the multiport test set and the multiport automatic calibration device as claimed in claim 14, wherein the combination is further configured in determining all systematic error coefficients to determine a reflection tracking for each port of the multiport test set.

20. The combination of the multiport test set and the multiport automatic calibration device as claimed in claim 14, wherein the combination is further configured in determining all systematic error coefficients to determine all N(N-1)/2 forward transmission tracking coefficients for all N(N-1)/2 two-port paths between all N-ports of the multiport test set.

21. The combination of the multiport test set and the multiport automatic calibration device as claimed in claim 14, wherein the combination is further configured in determining all systematic error coefficients to determine all N(N-1)/2 reverse transmission tracking coefficients for all N(N-1)/2 two-port paths between all N-ports of the multiport test set.

22. The combination of the multiport test set and the multiport automatic calibration device as claimed in claim 14, wherein the combination is further configured in providing the N-1 through conditions to provide N through conditions.

23. The combination of the multiport test set and the multiport automatic calibration device as claimed in claim 14, wherein the combination is further configured in providing the N-1 through conditions to provide N(N-1)/2 through conditions.

24. The combination of the multiport test set and the multiport automatic calibration device as claimed in claim 14, wherein the combination further comprises a controller that biases predetermined of a plurality of switching devices to present the three reflection standards.

25. The combination of the multiport test set and the multiport automatic calibration device as claimed in claim 14, wherein the combination further comprises a controller that biases predetermined of a plurality of switching devices to provide the N-1 through conditions.

26. The combination of the multiport test set and the multiport automatic calibration device as claimed in claim 14, wherein the plurality of switching devices comprise at least one single-pole, double-throw switching device that can be biased to a plurality of states to provide the at least three reflection standards.